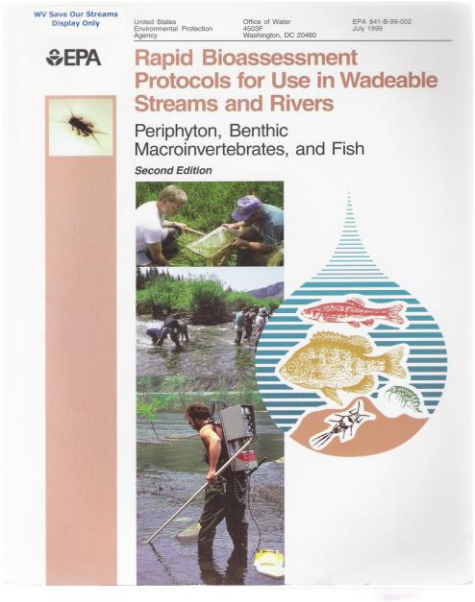
Follow-up training and problem solving

In addition to the initial training workshop, monitors, are retrained at QA/QC workshops within a year after their initial training and annually thereafter. These workshops are designed to accomplish three things: First, any questions monitors may have are addressed. Second, the volunteer's monitoring skills are evaluated through observing their monitoring techniques and filling out a simple quality assurance checklist for field collection, which is used to review monitor-sampling technique and identify sources of error.

Monitors are given a macroinvertebrate identification quiz in which they are asked to identify preserved specimens from the bug library or complete a blank copy of the macro-invertebrate ID-card. Monitors are allowed to use any materials they normally have in the field to identify organisms from all major groups in the program reference collection. These tests are scored and reports are used to evaluate the accuracy of data at each monitoring station. The QA/QC test can be re-taken by the monitor after a period of two weeks from the original test, if approved by the program coordinator and/or trainer administering the test.



Data reliability may be determined by spot checks in the field to evaluate performance. Choosing monitors at random and field-testing them for accuracy do this. Using a quality assurance checklist, staff or regional coordinators observe the entire monitoring process from riffle identification to finished survey results. This allows evaluation of the monitoring process and corrections to avoid future mistakes.

Program staff will also assist monitors with questions on specific problems throughout the year, such as how to determine the source of pollution or analyze a particular pollution problem or new stream condition such as spring algae bloom. Staff may also consult with other scientists for any questions on complex technical issues. University staff members have been consulted for assistance in identification of unusual organisms and Division of Water Resources staff has been consulted for unusual water conditions. An important aspect of the program is the commitment of the DEP to follow up on any citizen monitoring effort, which may reveal a potential water pollution problem.

The coordinator will follow-up with certified monitoring groups as often as possible in order to assist them with fieldwork and act in an advisory role.

WVDEP's Division of Water Resources staff have reviewed the program monitoring methodology and compared it against their own methods. The Division of Water Resources staff suggestions are included in program techniques and instructions. The program has no formal advisory board for questions but will use the advice of the late Dr. Jim Plafkin of EPA's monitoring branch for monitoring system design and modification. In addition, the program staff maintains reference publications on fresh water invertebrates and other sciences necessary to the program.

The program staff has been trained in the use of protocols for monitoring of benthic macroinvertebrates and will consult the EPA publication 841-B-99-002 Rapid Bioassessment Protocols for Use in Streams and Rivers: Benthic Macroinvertebrates and Fish, 2nd Edition.

Because of the thorough rubbing of all rock surfaces and the meticulous disturbance of all bottom substrate within the sample area, the program will be able to sample all organisms representative of all major macro habitats within the riffle area. This is evidenced both by the presence of leaf packs and sticks, and the presence of all the major groups of organisms (shredders, scrapers and filterers) in most samples. Also, all macroinvertebrates caught in the sample are used in the sample (thereby eliminating sample bias) and all are identified to order level, kinds (an estimate of families based upon morphological differences), or family level.

The U.S. Environmental Protection Agency (EPA) Region III office will review and approve the program protocols for biological monitoring outlined in this document and supporting attachments.